January 2015

Message from the Astrophysics Division Director

The enduring science questions for astrophysics – how does the universe work, how did the familiar sky of galaxies and stars come to be, are we alone – form the foundation of the strategic science drivers behind the past five decadal survey documents provided by the National Academy of Science, including the 2010 Decadal Survey, *New Worlds, New Horizons in Astronomy and Astrophysics*.

As I described during the NASA Town Hall at the 225th meeting of the American Astronomical Society in Seattle, WA, NASA is looking forward to making progress toward these goals in 2015.

- In 2014, NASA Astrophysics flight missions continued to be highly productive, announcing ground-breaking discoveries every month.
- The FY15 Appropriations Act provides funding for NASA astrophysics sufficient to continue its programs, missions, and projects as planned. The total funding appropriated for NASA astrophysics, including JWST, is $1.33B, the same as appropriated in FY14. This appropriation fully funds JWST to remain on plan for an October 2018 launch; funds continued pre-formulation and technology work leading toward WFIRST; restores SOFIA to the budget albeit with a 17% reduction from FY14; provides funding for SMD's education programs; and funds NASA's core astrophysics research, technology, Explorers, and operating mission programs.
- The astrophysics operating missions continue to generate important and compelling science results, and new missions are under development for the future. Chandra, Fermi, Hubble, Kepler/K2, NuSTAR, Spitzer, Suzaku, Swift, and XMM-Newton have been awarded mission extensions following the 2014 Senior Review. SOFIA is in prime operations as of May 2014. Missions under development (and their currently planned launch dates) include ISS-CREAM (2015), LISA Pathfinder (2015), ASTRO-H (2015), NICER (2016), TESS (2017), JWST (2018), and Euclid (2020). New Explorers will be selected (SMEX in 2015, MIDEX in 2017), and NASA is joining ESA's Athena mission and ESA's L3 gravitational wave observatory.
- JWST continues to make progress, having completed a highly successful cryovacuum test of the Integrated Science Instrument Module in 2014. The start of the Primary mirror assembly is scheduled for 2015, amongst other major milestones. JWST remains on cost and on schedule for an October 2018 launch.
- The Hubble Space Telescope 25th Anniversary on April 24, 2015, will be celebrated through a series of events including social and traditional media outreach programs; exhibits around the world at museums, airports and other venues; education programs in all 50 states; re-release of the IMAX "Hubble 3D" movie; and many more activities to engage the public, students, and educators worldwide.
- The pre-formulation study of WFIRST continues in 2015 with the $50M appropriated for the purpose. In early 2015, the Science Definition team will submit its report to NASA. The rest of the year will include technology development for the instruments and continued risk mitigation activities for the telescope and the mission.

- NASA and the National Science Foundation have initiated a partnership for Exoplanet research in response to the 2010 Decadal Survey recommendation to "*…support an aggressive program of ground-based high-precision radial velocity surveys of nearby stars to identify potential candidates … for a future space imaging and spectroscopy mission."* Initially, the National Optical Astronomy Observatory (NOAO) share of the WIYN telescope will be made available to the U.S. astronomical community using the existing instrumentation for an Exoplanet-targeted Guest Observer program. A NASA-funded facility-class Extreme Precision Doppler Spectrometer for the WIYN telescope will be made available when it is completed around 2018; NASA is soliciting proposals for instrument development in early 2015.
- An Announcement of Opportunity for the Astrophysics Explorers Program was released in September 2014, and approximately 25 proposals were received before the December 18, 2014, due date. The target for Step 1 selections is summer 2015 (for additional information, see http://explorers.larc.nasa.gov/APSMEX/).
- The Astrophysics Research Program had a proposal selection rate of between 11% and 56% for ROSES R&A competitions in 2014, with an overall average proposal selection rate of ~20% across all of astrophysics; the details are available in my Town Hall presentation. There will be no solicitation for proposals for the Astrophysics Theory Program (ATP) in 2015; there is no loss in ATP funding, just resynching the solicitation schedule with the availability of funding to reduce the long waiting period for the distribution of funds.
- Progress continues to be made towards achieving 2010 Decadal Survey priorities through strategic technology development and partnerships, as described in earlier newsletters. A "scoreboard" of progress against Decadal Survey prioritized recommendations is available in my Town Hall presentation.
- The Astrophysics Mid-Decade Review will be conducted during 2015-2016. The study will be co-sponsored by NASA, NSF, and DOE, which are in the process of charging the National Research Council. The formation of the Study Committee will begin soon.
- A major activity for the Astrophysics Division this year is beginning preparation for the 2020 Decadal Survey. To enable prioritization of large space mission concepts to follow JWST and WFIRST by the 2020 Decadal Survey Committee, NASA needs to conduct mission concept studies and initiate technology development for candidate large space missions. NASA's plans are described in *Planning for the 2020 Decadal Survey: An Astrophysics Division White Paper*, available at http://science.nasa.gov/astrophysics/documents.

Finally, we are seeking one or more experienced scientists to take leave from their U.S. home institution for a 2-year visiting position (can extend up to 6 years) to work in the Astrophysics Division at NASA Headquarters. Your talent can make a difference in the management of the Astrophysics grants programs; planning, development, and management of NASA missions; and strategic planning for the future of NASA astrophysics. Please see our listing in the AAS Job Register (http://jobregister.aas.org/job_view?JobID=49728) or contact Stefan Immler at stefan.immler@nasa.gov.

My entire Town Hall presentation from the January AAS meeting, as well as the 2014 Update to the *Astrophysics Implementation Plan*, is available at http://science.nasa.gov/astrophysics/documents/.

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